Proceedings of the 2017 Winter Simulation Conference
W. K. V. Chan, A. D'Ambrogio, G. Zacharewicz, N. Mustafee, G. Wainer, and E. Page, eds.

HISTORY OF THE WINTER SIMULATION CONFERENCE: ORIGINS AND EARLY YEARS (1967-1974)

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ABSTRACT

This paper discusses the Origins and Early Years (1967-1974) of the Winter Simulation Conferences. Summary information is given for each of the conferences in that interval, with expanded discussion included for the 1967, 1968, and 1969 formative conferences. The last of these Early Years conferences leads into the sequential paper in this History of the Winter Simulation Conference session, which deals with the Winter Simulation Conference Renaissance Period (1975-1982).

1 INTRODUCTION

The structure of this paper is straightforward. Section 2 provides an overview of the various names that have been given to the Winter Simulation Conferences over the years, and describes how they will be referred to here. Sections 3 through 9 then respectively deal with the sequence of seven Winter Simulation Conferences that took place during the Early Years. Section 10 provides a brief conclusion for this paper and a look-ahead for the Renaissance Period paper that follows.

2 HISTORICAL NAMES OF THE WINTER SIMULATION CONFERENCES

What we now call the Winter Simulation Conference (WSC) started in 1967, but the name Winter Simulation Conference was first used as part of the name of the 1971 conference, and since then has been used consistently as the entire name for each subsequent conference (prefixed by the year when appropriate). In summary, here are the official names of the seven conferences described in this paper.

1967: The Conference on Applications of Simulation
Using the General Purpose System Simulation (GPSS)
1968: The Second Conference on Applications of Simulation
1969: The Third Conference on Applications of Simulation
1970: The Fourth Conference on Applications of Simulation
1971: 1971 Winter Simulation Conference:
Fifth Conference on Applications of Simulation
1973: 1973 Winter Simulation Conference
1974: 1974 Winter Simulation Conference

We will sometimes also use 1967 WSC, …, 1971 WSC to refer to the first five conferences. We will use Winter Simulation Conference(s), or just WSC(s), to refer to the conference(s) in general.

The following seven sections each start by giving a summary of selected key features of a WSC that took place during the 1967-74 period, and then in some cases, especially for 1967, 1968, and 1969, also include more detailed insights into the formative aspects of those WSCs.

3 THE 1967 WINTER SIMULATION CONFERENCE

This first WSC has the longest formal name given to any of the WSCs: The Conference on Applications of Simulation Using the General Purpose System Simulation (GPSS). The basis for that name is among the things discussed in this section. Some of the material presented here and elsewhere in the paper is derived from the papers in the "The Winter Simulation Conference: Celebrating Twenty-Five Years of Progress" section of the 1992 Silver Anniversary WSC *Proceedings*. Those *Proceedings* can be accessed by going to wintersim.org and then selecting Program Archive in the Archive/Info dropdown.

The eventual origin of the Winter Simulation Conferences is thought to have been influenced by relatively small-scale events going as far back as the late 1940s, and then by developments over time in computer hardware and software that facilitated simulation applications. The initiative to hold a conference on the applications of simulation using GPSS materialized in 1967. This initiative was conceived and undertaken by three individuals: Julian Reitman; Arnold Ockene; and Harold G. Hixson. Frequent professional interactions had been taking place for some time between Reitman and Ockene, who were each deeply involved with the use of the simulation software known as GPSS. Ockene was an IBM employee responsible for the marketing and support of GPSS which, prior to 1969, was IBM software bundled with IBM hardware. Reitman was a prominent user of GPSS in the Norden Division of United Aircraft Corporation and a leader in the Institute of Electrical and Electronics Engineers (IEEE). Hixson, an Operations Research Analyst with the Air Force Logistics Command at Wright-Patterson Air Force Base in Dayton, Ohio, was also the System Simulation Project Manager of SHARE (the IBM Scientific Users Group), as well as an active GPSS user himself.

As Arnold Ockene stated in the 1992 Silver Anniversary WSC *Proceedings*, "Julian was both a prolific model builder and a demanding advocate for ever more functions in GPSS. … Both Julian and I had an intense interest in applications, and at some point in our conversations the topic of a conference devoted to applications of GPSS arose. We had little doubt that the time was appropriate for such a conference."

And so in 1967 steps were taken to bring about the 1967 WSC. Hixson arranged for SHARE to be a conference Sponsor, including providing the "seed money" (working capital) to cover the up-front expenses involved in organizing the conference. He also took the initiative to be the General Chair of the Conference. Serving as Program Chair, Julian Reitman then secured additional Sponsorship from the Association for Computing Machinery (ACM), and IEEE, with two IEEE Groups sharing the IEEE Sponsorship: the Systems Science and Cybernetics Group (IEEE/SSCG) and the Computer Group (IEEE/CG). And so there turned out to be three Co-Sponsoring organizations (with the two IEEE Groups being counted together as one Co-Sponsor). There was a Coordination group consisting of Representatives from the Co-Sponsors, albeit that Hixson filled that role for SHARE and Reitman filled it for the IEEE System Science and Cybernetics Group.

Reitman also pro-actively sought out a spectrum of GPSS simulation users who were prospects for developing presentations of simulation applications using GPSS. Arnold Ockene took on the critical role of Publicity Chair and did a thorough job of promoting the planned conference.

Again quoting Ockene from the 1992 WSC *Proceedings*, "Our expectations for this first applications conference were modest, and we booked a room at the New York Hilton capable of holding two hundred people comfortably. We wound up with 401 registrants, reaching a point where we had to discourage others from attending since we were unable to move the meeting to a room large enough for even the 401 attendees; I can still see people standing along both sides and the rear of an uncomfortably warm meeting

room." The resulting revenue from the conference registration fees made it possible not only to repay the seed money but to provide a surplus as well to the three Co-Sponsoring organizations.

The conference was held in the New York Hilton for two full days on November 13 and 14. Colonel Ken Swanson of the Air Force Logistics Command in Dayton, Ohio, started the conference with the Keynote Address, entitled "Objectives of Simulation." Thirty-four presentations took place. Fourteen of the presentations filled the all-day plenary sessions on the first day, and the rest occurred on the second day, which started with parallel sessions during the morning. Geoffrey Gordon, the developer of GPSS at IBM, then gave a second-day luncheon address entitled "The Growth of GPSS." (Back in 1961, IBM had released GPSS as a product bundled with IBM hardware, and by the time of the 1967 conference, GPSS, still bundled, had been further developed substantially, resulting in GPSS II in 1963, GPSS III in 1965, and GPSS V in 1967.) Gordon's talk was followed by a two-hour plenary panel session on Goals for Improvements in the Language. The conference then concluded with an additional plenary panel session discussing on-line graphics, display stations, flowcharts, and aids for the modeler.

There were no *Proceedings* produced for the 1967 conference. However, attendees were given a program brochure in which for each presentation there were one or two paragraphs briefly summarizing that presentation. To provide a sense for the 1967 WSC presentations, here is a sample of the titles of five of the published papers: An Antisubmarine Warfare Model for Convoy Protection; Simulation as a Transportation Tool; Simulation Applied to a Court System; Simulation of a Multiprocessing System Using GPSS; and The Role of Simulation in Computing. In the final analysis, sixteen of the papers presented were subsequently published in the IEEE *Transactions on Systems Science and Cybernetics* in November, 1968. In those Transactions, 1967 General Chair Harold Hixson provided this postscript: "No doubt, you who attended the conference were as heartened as I at the enthusiastic response to our idea for a 'little' meeting. The turnout attests to the popularity of the General Purpose Simulation System (GPSS) and to the potential and demonstrated value of simulation in general. In depth and breadth of content, as well as in attendance, the meeting proved to be 'big,' and I am sure the momentum will carry on to future meetings. And for that, we especially owe a sincere thank you to the Program Chairman and to all others who put in so much time and effort to make the meeting a success."

It has been mentioned that the 1967 WSC was preceded by occasional simulation-related events taking place from time to time over the years. For example, according to the *Proceedings of the IBM Computation Seminar* held in August 1951, it was as early as November, 1949, that W. W. Woodbury ran a Monte Carlo simulation using an IBM Card Programmed Electronic Calculator. A Symposium on Monte Carlo Methods was held in 1956, conducted by the Statistical Laboratory at the University of Florida. IBM started to hold an annual Scientific Computing Symposium on Simulation Models and Gaming in 1959. A Workshop on Simulation Languages was held at Stanford University in 1964. That year an annual System Science Conference was also begun at the Moore School of Electrical Engineering at the University of Pennsylvania. And in 1966 there was yet another Workshop on Simulation Languages, this time held at the Moore School. (Harold Hixson presented a paper, Comparison of Four Simulation Languages, at that workshop.) These examples suggest that momentum was building over time for the creation of something like the Winter Simulation Conferences. To quote Harold Hixon from the 1992 Silver Anniversary WSC *Proceedings*, "In 1967 there was beginning to be a significant potential for a truly nationwide conference that would bring in people from all over the country (and all over the world). On a very small scale we had a prototype of the Winter Simulation Conference in the System Simulation Project of SHARE; and there was a counterpart of that project in Guide, which was a similar organization of business users of IBM computers."

The nature of the three organizations that became Co-Sponsors of the 1967 WSC had implications for the range of interests in a conference on the applications of simulation. IBM's SHARE included members with a variety of simulation interests, military applications among them. Co-Sponsors ACM and IEEE (the IEEE Computer Group and the System Science and Cybernetics Group) had industrial and academic members among whom some had interests in various aspects of simulation. And apart from the Co-

Sponsors, under the leadership of Julian Reitman the Norden Division of United Aircraft was deeply involved in the simulation of military systems.

As stated though, the 1967 WSC was on the topic of applications of GPSS, and IBM's GPSS was software still bundled in 1967 with IBM hardware. (An interesting aside is that before GPSS was released as a bundled product in 1961, "GPSS" was an abbreviation for "Gordon's Programmable Simulation System," aka the "Gordon Simulator," reflecting the name of its developer, Geoffrey Gordon. The release motivated the change in the meaning of "GPSS," which IBM had been using privately for its own purposes prior to the bundled release.) This could lead to the mistaken belief that the 1967 conference, which included "Applications of Simulation Using … GPSS" in its name, was really an IBM-specific conference, of interest and primary relevance only for users of IBM's bundled GPSS. But this was not the case. In addition to IBM, by 1967 five other computer manufacturers had introduced versions of GPSS for use on their hardware: Burroughs; Control Data; Honeywell; RCA; and UNIVAC. And so the 1967 WSC was not limited to the strict use of IBM's GPSS.

In conclusion, the 1967 WSC was a notable success in terms of organization, co-sponsorship, attendance, diversity of applications, financial results, and the planting of seeds for another conference.

4 THE 1968 WINTER SIMULATION CONFERENCE

Because of the success of the 1967 WSC, The Second Conference on the Applications of Simulation was held December 2-4, 1968, at the Hotel Roosevelt in New York City. A relevant development though was to expand the scope of the 1968 WSC to include applications based on any simulation language, not just GPSS, and also to include simulation material other than just applications.

1967 WSC Program Chair Julian Reitman became the General Chair of the 1968 WSC, and Arnold Ockene, who had been the 1967 WSC Publicity Chair, became the Program Chair. The conference-opening keynote, "Why is Top Management Difficult to Convince?", was delivered by John E. Snyder of The Boeing Company. The three 1967 WSC Co-Sponsors continued to be Co-Sponsors and were joined by a fourth, Simulation Councils, Incorporated (SCi, later re-named the Society for Computer Simulation, SCS).

The 1968 Conference Committee, in addition to consisting of the General Chair, Program Chair, and a Publicity Chair as in 1967, included a Secretary-Treasurer and an Arrangements Chair. Program Chair Arnold Ockene headed a Technical Program Committee composed of twenty one members, sixteen from industrial organizations and five from universities. This committee can be thought of, in part, as a formalization of Julian Reitman's 1967 WSC initiative of seeking out prospects for developing presentations relevant to the conference. After the 1968 WSC, no Technical Program Committees were subsequently part of WSC conference organization, presumably because there were many proposed presentations in response to the call for papers.

The 1968 WSC also had a Committee of Representatives from each of the four Conference Co-Sponsors. IEEE again provided two Representatives, one for the Computer Group and one for the System Science and Cybernetics Group. Each of those two Representatives had half a vote if there was a need for the Representatives to vote.

The conference consisted of twenty two sessions with a total of eighty papers, compared with thirty four papers at the 1967 WSC. A session typically lasted an hour and a half, and consisted of three or four presentations. Here is a sampling of eight of the application session titles, to provide a sense for the types of applications: Corporate and Financial Models; Transportation Models; Computer System Models; Manufacturing Applications; Reliability and Maintainability Models; Simulation of Human Behavior; Urban Systems; and Simulation and Ecology.

The application sessions were supplemented by other sessions with this sampling of five titles: Statistical Considerations; New Language Developments; Simulation Tutorial; The Case for Fortran: A Minority Viewpoint; and Languages for Modeling Computer Systems.

The 1968 WSC attendees numbered 857, more than double the number who attended the 1967 WSC. The Co-Sponsors again recovered their seed money, and received a surplus as well.

Whereas there were no proceedings produced by the 1967 WSC, the 1968 WSC Conference Committee published a 368-page *Digest* of the 1968 conference. Several observations from General Chairman Julian Reitman, taken from "A Message from the General Chairman" in the front papers of the *Digest*, are quoted here: "With such a wide range of interests present, it is interesting to look back and see how this conference evolved. Probably its earliest direct antecedent was the Workshop on Simulation Languages held at the Graduate School of Business, Stanford University, March 6 and 7, 1964. This was followed by another Workshop on Simulation Languages held at the University of Pennsylvania on March 17 and 18, 1966. These two conferences indicated a need to change the emphasis from an inward-looking comparison of simulation languages to the outward question of what can we do with the languages. This led to the Conference on the Applications of Simulation Using GPSS held November 13 and 14, 1987, in New York City. … The interest aroused by this Conference shows that simulation activity is fast becoming a special interest group of its own. Time will tell the direction this activity will follow. The important fact to notice is that it is growing, active, and planning ahead."

And here are several comments from 1968 Program Chairman Arnold Ockene that appear in "A Message from the Program Chair" in the front papers of the *Digest*: "The permanent record of the technical program is contained herein. It represents, I believe, the most diverse collection of discrete-event simulation work ever presented at a single conference. Authors were asked to submit abstracts of approximately 1,000 words for publication, along with significant visual material. This rather severe constraint was imposed in order to keep the size (and cost) of this document within reasonable bounds, and I take this opportunity to thank the many authors for doing their best to comply with this request. … I also acknowledge, with sincere thanks, the invaluable contribution of the many session chairmen, panelists, and paper referees. The strength of the technical program is a direct result of their efforts. Last but by no means least, I thank the other members of the Conference Committee and the sponsor's representatives for their contributions to the planning and organization of this meeting."

In conclusion, the 1968 WSC was a solid success in terms of organization, diversity of content, quality of presentations, attendance level, financial results, and the motivation to continue with additional WSCs.

5 THE 1969 WINTER SIMULATION CONFERENCE

Following the success of the 1968 Conference, a 1969 WSC was held December 8-10 at the International Hotel in Los Angeles, retaining the scope of the 1968 WSC to include papers not only on applications but on other simulation-relevant material as well. Arnold Ockene, who had been the 1968 Program Chair, was the 1969 General Chair, and Philip J. Kiviat was the Program Chair. The four organizations that Co-Sponsored the 1968 WSC continued as Co-Sponsors, and were joined by The Institute of Management Sciences (TIMS) College on Simulation and Gaming and the American Institute of Industrial Engineers (AIIE). Two Divisions within AIIE shared in the AIIE Co-Sponsorship: the Computer and Information Sciences Division; and the Operations Research Division. (Similar to the case of IEEE, each of the two AIIE Divisions had a Representative with half a vote if and when the Representatives voted on issues.)

As was true for the 1967 and 1968 WSCs, there was an ad hoc Conference Committee composed for the 1969 WSC. In fact, each Early Years WSC was characterized by an ad hoc Conference Committee. (There were no requirements in place for specifying the structure of the Conference Committees during the Early Years.) In addition to the General Chair and the Program Chair, the 1969 Conference Committee consisted of a Secretary, a Treasurer, a Registration Chair, a Publications Chair, and a Local Arrangements Chair who had five Local Arrangements Sub-Committees under him: Materials, Printing and Mailing; Publicity; Meal Arrangements; Audio-Visual Arrangements; and Room Arrangements. The 1969 Conference Committee consisted therefore of seven members, including a Publications Chair for the first time, and not counting the five members of the Local Arrangement Sub-Committees.

The conference consisted of sixteen sessions, encompassed a total of forty six presentations, and had an estimated attendance of 400. (There are no surviving records of attendance levels for the 1969-1973 WSCs, but the estimated attendances can be seen by going to wintersim.org, and then selecting Past Conferences in the Archive/Info dropdown.)

Although each of the WSCs opened with a plenary session, no keynoter information is provided in the 1969 WSC *Proceedings*, and that is the case for each of the subsequent Early Years WSCs as well.

The forty six conference presentations were each backed by a complete paper in the 1969 WSC *Proceedings*. This contrasts with the 1968 WSC, when each presentation was only backed by a circa 1,000-word abstract in the *Digest* of the conference. To quote 1969 WSC Program Chair Phil Kiviat in the *Proceedings* front papers: "Each paper contained in this document is complete. While authors were asked to keep within a twelve page limit, they were not restricted to merely abstracting their work. It is our feeling that this completeness gives the proceedings an increased value. We hope that by concentrating on discussions within the sessions, rather than a reading of papers, we can bring out an extra dimension in the quality of the conference. Each of you can contribute to that quality by reading the papers before you attend the sessions and by asking searching questions of the authors and their discussants."

It is implied in the preceding quoted material that the 1969 full-paper WSC *Proceedings* were made available to attendees at the time of the conference. Not only was this convenient for the attendees, but the timing also meant that presenters had to complete their papers and have them reviewed and perhaps modified well before the conference took place, and this was likely to enhance the quality of the papers and the presentations. (This same timing of *Proceedings* availability and full-paper content for papers presented in the conference sessions has been maintained in the WSCs from 1969 forward.) Further quoting Phil Kiviat: "One hundred sixty five abstracts were submitted this year by people who expressed an initial interest in participating in the conference. Of these, ninety seven materialized as draft papers. Each paper was reviewed by three qualified professionals and submitted to a comprehensive study of its professional accuracy, completeness, and relevance. In an attempt to keep the conference at a manageable size, and to minimize the number of conflicting parallel sessions, many good papers could not be accepted. More often than not, rejections were due to the rigors of stiff competition and our search for a balanced program, rather than to poor technical quality. The overall quality of all the papers submitted was strikingly high."

As indicated above, the 1969 WSC, like its 1967 and 1968 predecessors, marked another successful staging of the WSC, and importantly, it initiated the preparation of *Proceedings* providing full length papers documenting in detail the presentations that were given.

6 THE 1970 WINTER SIMULATION CONFERENCE

The 1970 WSC took place December 9-11 at the Waldorf Astoria in New York City, with 1969 WSC Program Chair Philip J. Kiviat becoming the General Chair, and Michel Araten serving as Program Chair. (Note that in each of the 1968, 1969, and 1970 WSCs, the General Chair for that WSC had been the Program Chair for the preceding WSC. A pattern was emerging in the process, but it was not a required pattern.) The conference was Co-Sponsored by the same six organizations that Co-Sponsored the 1969 WSC.

The 1970 Conference Committee came close to matching the 1969 Conference Committee in structure. Instead of an individual Secretary and an individual Treasurer though, one person took both roles. And there were only three Local Arrangements Sub-Committees: Publicity; Audio-Visual Arrangements; and Room Arrangements.

The 1970 WSC took the form of eighteen sessions during which forty six papers were presented. The number of attendees is estimated to have been 1,000, surpassing what at that time had been the highest attendance, 856 at the 1968 WSC, which was also held in New York.

Quoting Program Chair Michel Araten in the *Proceedings* front papers: "One hundred and twenty abstracts were submitted of which forty-six papers materialized as being of acceptable quality. … Decisions not to accept certain papers were mainly due to stiff competition, our search for a balanced program, and the desire to limit the number of concurrent sessions, rather than poor technical quality."

As initiated with the 1968 WSC, the conference was not limited to applications. For the first time, for example, tutorials on all three of the principal simulation languages then in vogue, GPSS, SIMSCRIPT and DYNAMO, were presented. As for applications though, quoting Araten further: "By emphasizing application aspects, and not merely the theoretical aspects of simulation, we are underscoring its practical usage in real-world decision-making problems. Thus, the contributed papers are encouraged to cover problem-to-model translation, programming language selection, data collection problems and their solutions, tests of experimental validity, and the implementation of the model and its results within the organizational environment."

Quoting General Chair Phil Kiviat in the *Proceedings* front papers: "The four years since the first conference have gone by amazingly fast and have been prolific. The number of companies utilizing simulation techniques has grown, as has the range of applications. Our technical tools have been adapting themselves to our ever changing computing environment with notable speed --- simulation languages are available on time-sharing systems and computers with virtual memories, can be used interactively through terminals and are in many instances pioneering in modern programming concepts."

The WSCs were clearly gaining additional momentum. Especially notable for the 1970 WSC was the estimated attendance level of 1,000 and the number of abstracts submitted, one hundred and twenty, of which only forty six were accepted in the final analysis.

7 THE 1971 WINTER SIMULATION CONFERENCE

This conference took place on December 8-10 and like its immediate predecessor was again held at the Waldorf Astoria in New York City. The General Chair was Michel Araten, who had been the 1970 Program Chair. Joseph S. Sussman was the Program Chair. The conference consisted of 60 papers and was attended by an estimated 1,100 people, setting a record that stands to this day.

The 1971 Conference Committee was of size five: General Chair; Program Chair; Registration-Treasurer; Publications Chair, and Arrangements Chair. The conference continued to be Co-Sponsored by the same six organizations that Co-Sponsored the 1969 and 1970 WSCs. AIIE added its Technical Division to the other two AIIE Divisions already included in AIIE's Co-Sponsorship, resulting in three AIIE Representatives, each with a one-third vote. There were then nine Representatives from the six Sponsoring Organizations.

Quoting Program Chair Joe Sussman from the *Proceedings*: "This year's program reflects the continued expansion of the field of simulation. We have materially increased the number of application sessions over last year's in response to the increased scope of the papers received as well as to reflect the large increase in the sheer number of papers submitted. One hundred and thirty papers from a variety of applications, disciplines, and methodologies have given rise to a strong, broad, technical program of 60 papers. … A special effort has been made to expand our tutorial offerings. Eight tutorial sessions are included in the program, including both a beginner's and advanced practitioner's section in GPSS. Also, a methodology tutorial is included for the first time."

As General Chair Michel Araten stated in the *Proceedings*: "The response that we have found to our annual simulation conference has been most encouraging. Surveys of the uses of Management Science in the business, social, and political environment point to simulation as being one of the most widely used techniques."

Conclusion: the 1971 WSC continued the series of highly successful annual conference offerings.

8 THE 1973 WINTER SIMULATON CONFERENCE

Until now, the WSCs had always taken place late in the calendar year (the first in November, and then each of the next four in December). But then, instead of having the sixth WSC in late 1972, it took place January 17-19, 1973, at the St. Francis Hotel in San Francisco. This was the second WSC to take place on the West Coast, with the other four having taken place in New York City.

The 1973 WSC General Chair was Joseph Sussman, who had been the 1971 Program Chair. Austin Hoggatt was the 1973 Program Chair. There were an estimated 600 attendees, whereas the 1969 West Coast WSC had an estimated attendance of 400. There were 15 sessions in which fifty five full-length papers were given. There were also two panel sessions, titled Simulation's Role in Project Development, and Simulation in Government. And there were five Tutorials, given in this sequence: GPSS; GASP; Simulation of Econometric Models; Methodology for the System Sciences; and SIMSCRIPT.

The ad hoc Conference Committee consisted of seven members. There were the General Chair and the Program Chair, and this time there was also a Deputy Program Chair. In addition, there was a Treasurer, a Publications Chair, an Arrangements Chair, and a Registration Chair. The six organizations that Co-Sponsored the preceding three WSCs (ACM; AIIE; IEEE; SCi; SHARE; and TIMS) continued to be Co-Sponsors, resulting in nine Representatives, five of whom had fractional votes.

An innovation at the 1973 WSC was a Paper Fair. The Paper Fair took place in a large area consisting of 28 stations assigned to researchers, each station corresponding to a relevant piece of work, and each including a display board on which items could be posted. There were no formal presentations for the work associated with the Paper Fair, but each piece of work was backed by a 1-page entry in the *Proceedings*. Attendees could approach the researchers at will and talk with them about their work and the problem area their work addressed.

Quoting General Chair Joe Sussman from the 1973 WSC *Proceedings*: "Traditionally, the conference has served as a forum for presentation of papers on the cutting edge of simulation applications and methodology as well as a platform for tutorials by leaders in the field. This year is no exception. The program committee has succeeded in putting together an exceptionally strong technical offering."

And as Program Chair Austin Hogatt put it: "The Winter Simulation Conference has grown to be an impressive mixture of theory and application, languages and models, technicians and managers, and academic vs. government or industry. Simulation as a method of defining and solving problems is maturing in that major innovations have been made and the field is now exploiting footholds which have been gained in a number of application areas. … The effort which has been put into this program has been amply rewarded and an overview of the simulation activity has emerged which may permit us to voice cautious optimism about the future of the field."

In summary, the 1973 WSC successfully continued the Early Years WSCs.

9 THE 1974 WINTER SIMULATION CONFERENCE

The 1974 WSC, which was the concluding Early Years WSC, took place January 14-16 at the Washington Hilton Hotel in Washington, D.C. This was the first East Coast WSC location other than New York City, where four of the first five WSCs had been held. The long-standing list of six Co-Sponsoring organizations was joined by a seventh Co-Sponsor, the Operations Research Society of America (ORSA). The number of Co-Sponsor Representatives consequently increased by one more than the 1973 WSC count, which had been nine.

The 1974 WSC General Chair was Michael Morris. This was the first WSC for which the General Chair was someone other than the person who had been the Program Chair for the preceding WSC. The 1974 WSC Program Chair was Harold Steinberg. Attendance at the conference was 463. The conference consisted of 24 sessions, of which six were Tutorial sessions. Not counting the Tutorials, the sessions consisted of 71 presentations with full-paper *Proceedings* entries. In addition, there were also five Workshop sessions, with a total of 37 brief entries in the *Proceedings*.

The Conference Committee was of size ten. There were the General Chair, Program Chair, Treasurer, Publicity Chair, Publications Chair, Registration Chair and Arrangements Chair. There were also a Deputy Program Chair, a WSC Continuity Chair, and an Activities Chair.

Although the 1974 WSC was judged to have been successful at the time, it developed that there was a serious problem in the financial area that was never resolved. The books were never closed on the conference, and the seed money was never repaid to the Co-Sponsors. This fact, and several other operational considerations as well, had the effect that although a 1975 WSC had been planned, it never did take place. The next paper, which covers the 1975-1982 Renaissance Period in this History of the Winter Simulation Conference session, takes this up in further detail. On the positive side though, the existence of a Renaissance Period makes it clear that the failure to close the books on the 1974 WSC did not turn out to be the death knell for the WSCs after all, as had been feared at one time.

10 CONCLUSION

This paper has discussed the origin of the first Winter Simulation Conference and traced aspects of the evolution of the following WSCs through 1974, the WSCs that mark the Early Years. The paper is the first in the sequence of six papers making up the two History of the Winter Simulation Conference sessions taking place at the 2017 Golden Anniversary Winter Simulation Conference.

AUTHOR BIOGRAPHIES

THOMAS J SCHRIBER is a Professor Emeritus in the Technology and Operations Department of the Stephen M. Ross School of Business at the University of Michigan. He served on the WSC Board of Directors, starting in 1978 and chairing the Board in 1982-83. He received The Lifetime Professional Achievement award from the INFORMS Simulation Society in 2001, was given a Landmark Paper Award at the fortieth WSC in 2007, spoke as a Titan of Simulation at the 2009 WSC, and has presented one or more times at each of the forty nine WSCs from 1968 through 2017. He has also been named a Pioneer of Simulation (http://d.lib.ncsu.edu/computer-simulation). Email: schriber@umich.edu.

JULIAN REITMAN received a B.E.E. from the City College of New York in 1949, and an M.E.E. from New York University in 1954. He worked from 1955-1961 at Teleregister Corporation, performing systems analysis and design for airline-registration systems. From 1962-1987 he then worked at Norden Systems, performing analyses of complex systems using discrete-event simulation languages, primarily GPSS. He also developed, used, and made available an enhanced version of GPSS called GPSS/Norden, with a man machine interface, improved graphics, and data bases. He played a key role in founding the Winter Simulation Conferences, including serving as Program Chair in 1967 and General Chair in 1968. He is a Senior Life Member of IEEE. He is now retired from a position teaching the history of science and technology at the University of Connecticut, Stamford Campus, prior to which he also taught at New York University, the University of Bridgeport, and George Mason University. Email: reitman@att.net.

ARNOLD OCKENE was one of the three originators of The Conference on Applications of Simulation Using the General Purpose System Simulation (GPSS), which was the first of the Winter Simulation Conferences. He served a key role as Publicity Chair for the first conference. In the following three years he was, respectively, the Program Chair, the General Chair, and the Arrangements Chair of the Second, Third, and Fourth Conferences on Applications of Simulation. From 1961 to 1969 he was involved in the evolution of GPSS at IBM, first as a user and teacher, then as IBM's interface person between customer users and program developers. After a five year hiatus he returned to IBM, where he spent ten years with IBM World Trade, six in IBM's Academic Information Systems unit, and two years in technical computing before retiring in late 1993. After a couple of consulting assignments that involved too much travel, Arnie then took a full-time job as an account manager for a software company that developed

online banking products for several nationwide banks (1996-1999). The final phase of his active employment was perhaps the best, a part-time job working from home with (yet again) IBM. This stretched over a ten year period and several job descriptions, but the common thread was IBM's Web presence. And "home" could be anywhere, including winters on Maui. Email: ao221@caa.columbia.edu.

HAROLD G HIXSON received a B.S. in Mathematics from Otterbein College in 1957. He then earned an Air Force commission through ROTC as a Second Lieutenant, spending several years on active duty and another twenty five in the Air Force Reserve, retiring as a Lieutenant Colonel in 1985. While on active duty he was an Actuary at Wright-Patterson Air Force Base in Dayton OH. He then remained at Wright-Patterson as a Civil Service employee, moving through the ranks of Actuary and Mathematician to become an Operations Research Analyst in the Air Force Logistics Command's Simulation Center. Having started using GPSS in 1965, he became the System Simulation Project Manager for SHARE (the IBM Scientific Users Group) in early 1967. He conducted a User Survey of desired GPSS features, which were then reflected in GPSS V. With Arnold Ockene and Julian Reitman, he also played a key role in bringing about The Conference on Applications of Simulation Using the General Purpose System Simulation (GPSS) in 1967, arranging to have SHARE be the first among the three Co-Sponsors for the conference, and serving as its General Chair. Meanwhile, he continued his career at Wright-Patterson, as an Operations Research Analyst, transitioning to the Management Sciences Directorate for Plans and Programs in the Air Force Material Command. After his long and successful career at Wright-Patterson, he is now retired and is writing a book on number theory. Email: hehixson@juno.com.